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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,449	12/05/2003	William Planey	LOVE-51.CON	9343

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EXAMINER

NGUYEN, DAO H

ART UNIT PAPER NUMBER

2818

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/728,449

Applicant(s)

PLANEY, WILLIAM

Examiner

Dao H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0904</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. In response to the communications dated 0812/05/2003 through 09/20/2004, claims 1-10 are active in this Application.

Claims 11-22 have been cancelled through a Transmittal Letter filed 12/05/2003.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant.
 - a. The information disclosure statement (IDS) submitted on 09/20/2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
 - b. This application is a Divisional of the Patent Application No. 10/215,570, filed 08/09/2002, now Patent No. 6,747,342.

Drawings

3. The drawings are objected to for the following reasons.

Figures 1-2 and 4 are not designated by a legend such as "Prior Art". The Legend is necessary in order to clarify what applicant's invention is (see MPEP § 608.02g). Appropriate correction(s) is/are required.

Specification

4. The specification is objected to for the following reason:

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract **not exceed 150 words** in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The specification has been checked to the extent necessary to determine the presence of possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

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6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim(s) 1-10 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 6, the limitation "wherein said semiconductor die is disposed between said mounting surface and said X-lead frame without bonding to said semiconductor die" is not clearly defined and distinctly pointed out the subject matter which is claimed as the Applicant's invention. It is not clear of what is/are not bonding to the semiconductor die? Both the mounting surface and the X-lead frame are not bonding to the die, or just either of them is not bonding to the die? (in contract, as shown in fig. 7 of the pending application, both the mounting surface 710 and the lead frame 735 are bonding to the die 720).

Claims 2-10 depend from rejected claim 1 and include all of the limitations of claim 1 thereby rendering these dependent claims indefinite.

Claim Rejection - Double Patenting

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis

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added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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10. Claims 1-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,747,342 ('342). Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at the time of the invention was made that claimed limitations of '342 to include all claimed limitations of the pending application, and/or that device claimed in the pending application can be modified to include all claimed limitations of '342. It is further noted that pending claim 4, which includes base claims 1 and 2, is identical to claim 1 of '342.

Claim Rejections - 35 U.S.C. § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 1 and 7 - 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunaway et al., EU Patent Application Publication No. 370745 in view of the Admitted Prior Art (Admission).

Regarding claim 1, Dunaway disclose a system mounting a semiconductor die within the package comprising:

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a mounting surface 22;
a lead frame 10 coupled to the mounting surface 22, and
wherein the die 46 is disposed between the mounting surface and the lead frame.

Dunaway does not teach that the lead frame is an X-lead frame.

However, figure 4 of Admission illustrates an X-lead frame with four angular tabs 430.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to replace lead frame 10 of Dunaway with the X-lead frame of the Admission, in order to provide conductive elements for use in interconnecting the lead frame with one of the other electronic device (it is noticed that in col. 5, lines 5 - 10, Dunaway et al. teach that "it is appreciated that lead-frames are variously constructed and shaped").

Regarding claims 7 - 10, Dunaway in view of Admission disclose all claimed limitations, except for the package and the terminals being conformed to an S08 configuration.

However, it is known that in order to be adapted by majority of the semiconductor industries, the package has to conform to the S08 configuration. So, it is

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inherent that the package structure in Dunaway is conformed to an S08 configuration in order to be adapted by the semiconductor industries.

13. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunaway et al. (EU Patent Application Publication No. 370745) in view of the Admitted Prior Art (Admission) and further in view of Tsivdis, U.S. Patent No. 5,293,058.

Regarding claim 2, Dunaway in view of Admission disclose all claimed limitations, except for the JFET having a surface region defining a source, a surface region defining a drain and a surface region defining a gate.

It is well known, and also taught by Tsivdis that MOSFET or JFET have a surface region 24 (fig. 4 of Tsivdis) defining a source, a surface region 22 defining a drain and a surface region 13 and 14 defining a gate.

Therefore, it is inherent that the transistor in Dunaway et al. having a surface region defining a source, a surface region defining a drain and a surface region defining a gate.

14. Claim(s) 1-10 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,040,626 To Cheah et al., in view of Yu et al., U.S. Patent No. 6,809,408.

Regarding claim 1, Cheah discloses a system mounting a semiconductor die 16 within a package 22, as shown in figs. 1-9, comprising:

a mounting surface 12/13;

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a lead frame 30/34 coupled to said mounting surface 12/13, and
wherein said semiconductor die 16 is disposed between said mounting surface
12/13 and said lead frame.

Cheah does not teach that the lead frame is an X-lead frame.

Yu discloses a semiconductor package comprising a lead frame having an X-
shaped or an X-lead frame. See fig. 3.

Therefore, it would have been obvious to one having ordinary skill in the art at
the time the invention was made to modify the lead frame of Cheah to have an X-
shaped as that of Yu in order to reduce the contact area between the die and the lead
frame, thereby significantly diminish the thermal stress applied from the lead frame to
the die. See col. 5, lines 51-59 of Yu.

Regarding claim 2, Cheah/Yu disclose the package wherein said semiconductor
die is a semiconductor power MOSFET, which definitely could be a JFET, having a
surface region defining a source, a surface region defining a drain and a surface region
defining gate. See col. 2, lines 47-64; col. 3, lines 31-47.

Regarding claim 3, Cheah/Yu disclose the power semiconductor package
wherein electrical coupling between said drain 18 and said X-lead frame is realized by

angular projections of said X-lead frame contacting said drain 18. See figs. 3-9 of Cheah. Note that in a CMOS, source and drain regions can be technically interchangeable or switchable.

Regarding claim 4, Cheah/Yu disclose the power semiconductor package wherein said X-lead frame is bonded to a first terminal 12B disposed on said mounting surface. See figs. 3-9, and col. 5, lines 17-29 of Cheah.

Regarding claim 5, Cheah/Yu disclose the power semiconductor package wherein a second terminal 12a disposed on said mounting surface is electrically connected to said source. See fig. 3-9 of Cheah.

Regarding claim 6, Cheah/Yu disclose the power semiconductor package wherein a third terminal 12c disposed on said mounting surface is electrically connected to said gate 19. See fig. 5 of Cheah.

Regarding claim 7, Cheah/Yu disclose the semiconductor package wherein said package is sized and shaped to conform to an S08 configuration. See col. 1, lines 12-19; col. 3, lines 64-67 of Cheah.

Regarding claim 8, Cheah/Yu discloses the semiconductor package wherein said first terminal is a solid terminal spanning the full width of four leads and the spaces

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between four leads on one side of said S08 package. See figs. 3-9 of Cheah, and fig.3D of Yu.

Regarding claim 9, Cheah/Yu disclose the semiconductor package wherein said second terminal is a solid terminal spanning a width of three leads and the spaces between three leads on a side of said S08 package opposite to said first terminal. See figs. 3-9 of Cheah, and fig. 3D of Yu.

Regarding claim 10, Cheah/Yu disclose the semiconductor package wherein said third terminal is a solid terminal spanning a width of a single lead on a side of said S08 package opposite to said first terminal. See fig. 3-9 of Cheah.

Conclusion

15. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday 9:00am - 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax numbers for all Customer Service is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Dao H. Nguyen', with a horizontal line underneath.

Dao H. Nguyen
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July 15, 2005

A handwritten signature in black ink, appearing to read 'David Nelms', with a horizontal line underneath.

David Nelms
Supervisory Patent Examiner
Technology Center 2800